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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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FISH & RICHARDSON, PC
4350 LA JOLLA VILLAGE DRIVE
SUITE 500
SAN DIEGO CA 92122

EXAMINER

PEREZ, G

ART UNIT

PAPER NUMBER

2834

DATE MAILED:

03/29/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/281,831

Applicant(s)

TAI ET AL.

Examiner

Guillermo Perez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 10-15 is/are pending in the application.
- 4a) Of the above claim(s) 10-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

This application contains claims 10-15 drawn to an invention nonelected. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 1 to 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brailsford (U. S. Pat. No. 4,475,068) in view of Posey (U. S. Pat. No. 5,293,523) and further of Bornand (U.S. Pat. No. 5,605,614) in view of Ho et al. (U. S. Pat. No. 5,629,918).

Brailsford discloses a DC motor (Figures 2 and 3) comprising:

a plurality of windings (21-24);

at least one magnetostatic relay (37-38) positioned in the motor to activate in the presence of a magnetic field, such that the magnetostatic actuation force causes said magnetic actuation plate to align itself with the magnetic field (see abstract lines 4-8), where each relay (37-38) is connected electrically to at least one corresponding winding (21-24) and to power.

Brailsford discloses a magnetic four-pole rotor (31) having at least one pole (32-35) positioned to induce a magnetic field in each magnetostatic relay (37-38) when passing by the relay (37-38).

Brailsford discloses that the windings (21-24) are arranged in pairs of primary and secondary windings (21-22 and 23-24) and each relay (37-38) connects to a corresponding one of the pairs of windings (21-24).

Brailsford discloses that the secondary windings (21 and 23) all connect to a common node (41) and each of the primary windings (22 and 24) connects to the corresponding relay (37-38).

However, Brailsford does not disclose at least one microelectronic mechanical system (MEMS) relay positioned in the motor to activate in the presence of a magnetic field, where each relay has a first substrate formed from a nonconductive or semiconductive material. Brailsford does not disclose a magnetic actuation plate micro-machined on said first substrate, said magnetic actuation plate having a first conductive surface. Brailsford does not disclose a second substrate provided adjacent to said magnetic actuation plate, said second substrate having a nonconductive surface and a second conductive surface. Brailsford does not disclose a springing beam etched on the substrate. Brailsford does not disclose two electrically conductive elements, one formed on the springing. Brailsford does not disclose that the springing beam includes a magnetic material. Brailsford does not disclose that said first and second conductive surfaces/elements define at least two switching states, including an open state in which the conductive surfaces/elements are physically separated from each other, and a closed state in which the conductive surfaces/elements physically contact each other. Brailsford does not disclose said magnetic material actuation plate, in the presence of a magnetic field, creates an actuation force that causes the electrically conductive

surfaces to switch from one of the switching states to another of the switching states. Brailsford does not disclose that the magnetic actuation plate/springing beam is formed with permalloy material to provide high plating capability.

Posey discloses a relay having:

at least one substrate (48) formed from a nonconductive or semiconductive material (column 5, lines 16 to 19);

a springing beam (42) formed on the substrate (48); and

two electrically conductive elements (42 and 44), one formed on the springing beam (42), that together define at least two switching states, including an open state in which the conductive elements are physically separated from each other (figure 3A), and a closed state in which the conductive elements physically contact each other (figure 3B).

Posey discloses that the springing beam (42) includes a magnetic material (50) which, in the presence of a magnetic field, creates a magnetostatic actuation force that causes the electrically conductive elements to apply power to or remove power from at least one of the windings by switching from one of the switching states to another of the switching states. Posey's invention have the purpose of avoiding an undesirable change in the magnetic flux field, which renders the switch insensitive to the proximateness of the permeable target object.

Bornand discloses at least one microelectronic mechanical system (MEMS) relay (figure 1) which is activated under the presence of a magnetic field (16).

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Bornand discloses a magnetic actuation plate (14) micro-machined on a first substrate, such that a magnetostatic actuation force causes said magnetic actuation plate to align itself with the magnetic field (column 4, lines 38-43), said magnetic actuation plate having a first conductive surface (12, 13); and

Bornand discloses a second substrate (1) provided adjacent to said magnetic actuation plate, said second substrate having a nonconductive surface and a second conductive surface (9, 10); and

a springing beam (5) etched on the substrate.

Bornand discloses two electrically conductive elements (12, 13, 2, 11), one formed on the springing beam (12, 13), that together define at least two switching states. Bornand discloses that the springing beam includes a magnetic material (14). Bornand's invention have the purpose of miniaturizing the electrical circuits to be opened and closed in an electrical system.

Ho et al. disclose that the magnetic actuation plate/springing beam is formed with permalloy material (column 7, lines 59-66). The invention of Ho et al. have the purpose of selectively interact and rotate the flap (14) out of the plane of the magnetic actuator.

It would have been obvious at the time the invention was made to modify the DC motor of Brailsford and provide it with the substrate, the springing beam and the two electrically conductive elements as disclosed by Posey. Also would have been obvious to provide the DC motor of Brailsford with the at least one microelectronic mechanical system (MEMS) relay, the magnetic actuation, the second substrate, the springing

beam etched on the substrate and the two electrically conductive elements disclosed by Bornand. Also would have been obvious to provide the DC motor of Brailsford with the material disclosed by Ho et al. for the purpose of avoiding an undesirable change in the magnetic flux field, which renders the switch insensitive to the proximate-ness of the permeable target object and miniaturizing the electrical circuits to be opened and closed in an electrical system and actuating the springing beam.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the magnetic actuation plate/springing beam of a permalloy material since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

2. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brailsford in view of Posey and further of Bornand in view of Ho et al. as applied to claim 1 above, and further in view of Tanikoshi (U.S. Pat. No. 3, 900, 780).

Brailsford, Posey, Bornand and Ho et al. disclose a DC motor as described on item 1 above. However, neither Brailsford, Posey, Bornand nor Ho et al. disclose that the motor is a three-phase motor; nor that the motor includes three relays separated from each other by approximately 120°.

Tanikoshi discloses that the motor is a three-phase motor (figure 7); and that the motor includes three relays separated from each other by approximately 120° (column 5, lines 40-49) for the purpose of controlling with a higher degree of accuracy the switching operations of the magnetic - sensitive elements.

It would have been obvious at the time the invention was made to modify the DC motor of Brailsford, Posey, Bornand and Ho et al. and provide it with the three-phase motor including the three relays arrangement disclosed by Tanikoshi for the purpose of enhancing the switching operations of the relays during rotation of the motor rotor.

Response to Arguments

Applicant's arguments filed June 28, 2000 have been fully considered but they are not persuasive. According to the Merriam-Webster's Collegiate Dictionary tenth edition, a magnetostatic force is a force being produced by a stationary magnetic field. Based on this definition, it is clearly stated in Brailsford and in Bornand that the actuation of the magnetic actuation plate is effected by a magnetostatic force, since the source of the magnetostatic force are permanent magnets (31 in Brailsford and 16 in Bornand). The permanent magnets are sources of a stationary magnetic field which produces a magnetostatic force on a magnetic surface, depending on its polarity.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Perez whose telephone number is (703) 306-5443. The examiner can normally be reached on Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308 1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3432 for regular communications and (703) 305 3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

Guillermo Perez
March 26, 2001


NESTOR RAMIREZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2300